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CONFIDENTIAL

OPERATING MANUAL

FOR THE

TYPE 1 TIME-RELEASE LEAFLET CARRIER

#9

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[redacted] 50X1

September 9, 1958

Dear Sir:

Task Order No. I

Enclosed are four copies of the operating manual for the Type 1 Leaflet Carrier.

We would appreciate any comments that you or your associates might care to make with regard to the manual.

Sincerely,

[redacted] 50X1

ABW:mjc

In Duplicate

Enclosures

OPERATING MANUAL

FOR THE

TYPE 1 TIME-RELEASE LEAFLET CARRIER

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OPERATING MANUAL
FOR THE TYPE 1 TIME-RELEASE LEAFLET CARRIER

General Description

The Type 1 Time-Release Leaflet Carrier, illustrated in Figure 1, is an airborne device that is designed to carry leaflets to a predetermined destination by means of a balloon or other similar conveyance and then to drop the leaflet load at a preselected time. Incorporated in the device is a means of adjusting the ballast to compensate for the loss of balloon lift during flight.

The Load-Container Assembly (D-19-A2), which is used to carry the leaflets, is attached by means of the Harness Assembly (D-19-A3) to the Drive Shaft (D-19-3) of a clock or Timer Movement (D-19-1) which is part of the Timer Assembly (D-19-A4). The Drive Cord (D-19-21), which is part of the Harness Assembly, is wrapped around the Drive Shaft and actuates the Timer Movement by transmitting a torque that is exerted on the Drive Shaft by the weight of the leaflets (the load), the Load Container (D-19-29), and the associated parts. The Timer Movement regulates the rate of rotation of the Drive Shaft.

To compensate for the loss of balloon lift during flight, ballast cards are released from the Type 1 Time-Release Leaflet Carrier at regular intervals. The release mechanism consists of the Ballast Rack (D-19-7), the Ballast-Release Cord (D-19-24), and the Ballast-Card Assembly (D-19-A8). The Ballast-Release Cord is threaded through holes punched in one corner of each ballast card and is fastened at one end to the Drive Shaft. As the Drive Shaft

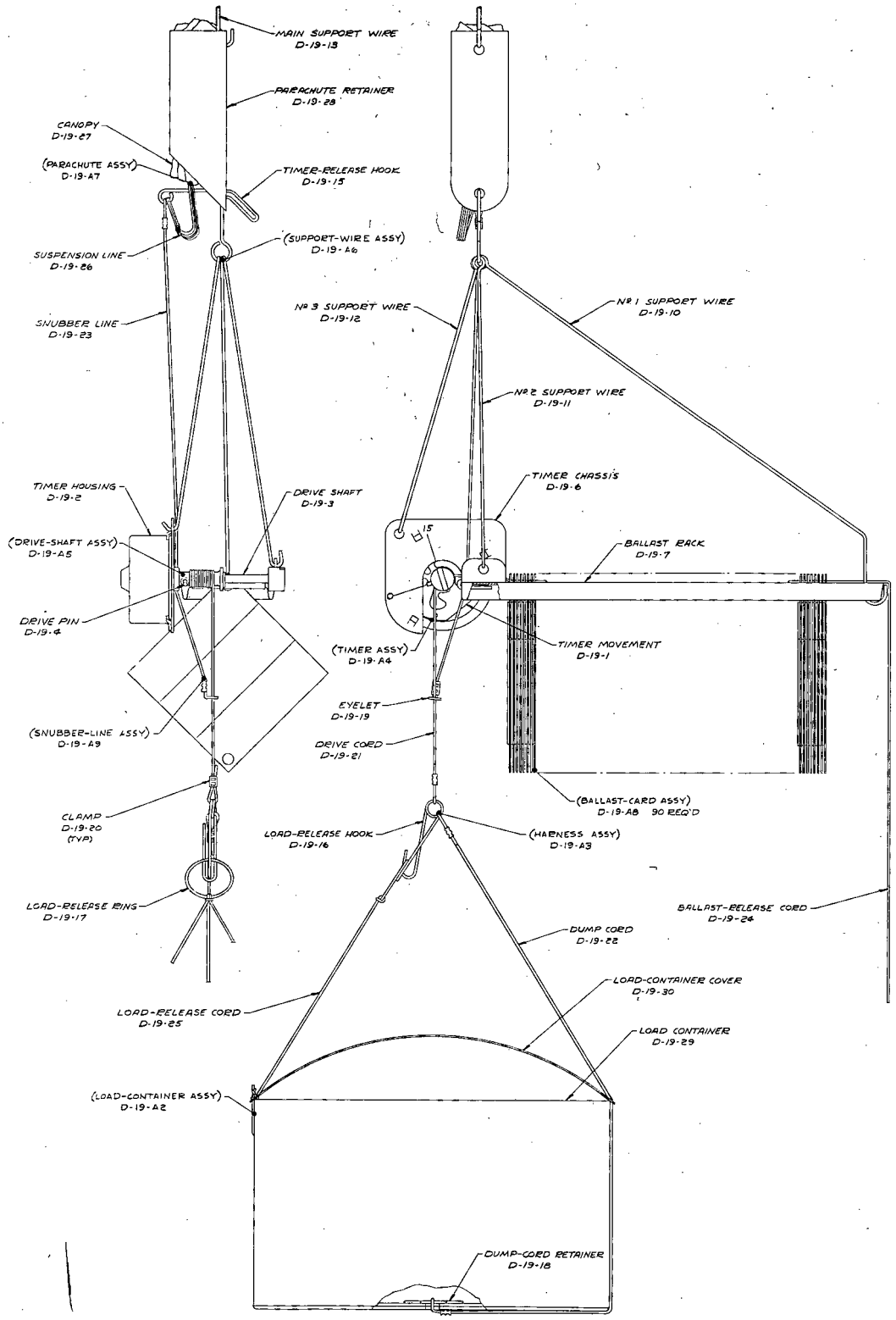

FIGURE 1. THE TYPE I TIME-RELEASE LEAFLET CARRIER ~ MAIN ASSEMBLY

rotates, the Ballast-Release Cord is wound around the Drive Shaft and the free end of the Ballast-Release Cord is pulled through the holes in the ballast cards. This action permits the ballast cards to be released at a rate of 1 card every 7-1/2 minutes.

Prior to the release of the balloon, the distance to the target is calculated in terms of time of flight in minutes. The Drive Cord is then placed over the Drive Pin (D-19-4), which is part of the Drive Shaft, and the Drive Shaft is turned so that the Drive Cord is wound on it. The Drive Shaft is turned sufficiently to provide for the previously calculated time period of flight; one complete turn of the Drive Shaft equals one hour of flight. When the target is reached, the Drive Cord, which has unwound from the Drive Shaft during flight, slips from the Drive Pin and allows the Load Container to fall free for the few inches. This momentary slack in the Drive Cord permits the Load-Release Hook (D-19-16) to release. The free fall of the Load Container is then retarded by the Snubber Line (D-19-23); and the Load Container turns upside down and dumps the leaflets. The weight of the leaflet load pulling against the Snubber Line disengages the Timer-Release Hook (D-19-15) from the Parachute Retainer (D-19-28). This action allows the entire assembly (all of the items except the Parachute Retainer and the Main Support Wire (D-19-13)) to be released from the balloon; as this assembly falls, the Canopy (D-19-27) of the Parachute Assembly (D-19-A7) is pulled free from the Parachute Retainer. See Figure 2. The Parachute Assembly then retards the fall of the attached assembly.

Note: On a less expensive model, the Parachute Assembly is omitted. In this case, the configuration of the Leaflet Carrier unit is the same except that the Timer-Release Hook is looped over the Main Support Wire and the Suspension Line is replaced by a line which goes to the balloon. With this arrangement, when the Load-Release Hook comes free, the balloon is upset by the line from the Load-Release Hook, so that the hydrogen is released and the deflating balloon acts as a partial brake for the gradual descent of the Leaflet Carrier unit.

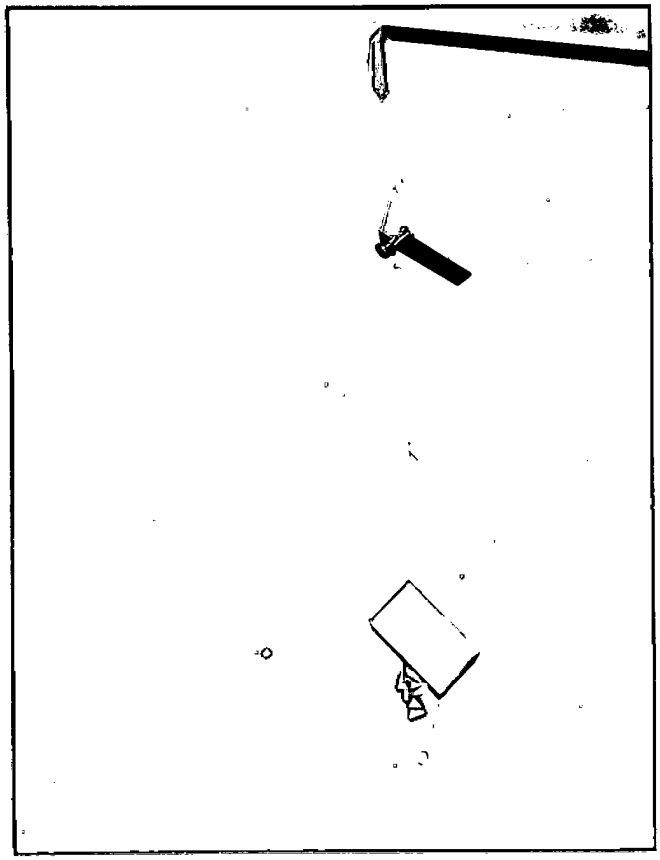

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Figure 2. Action of Leaflet Carrier at Target

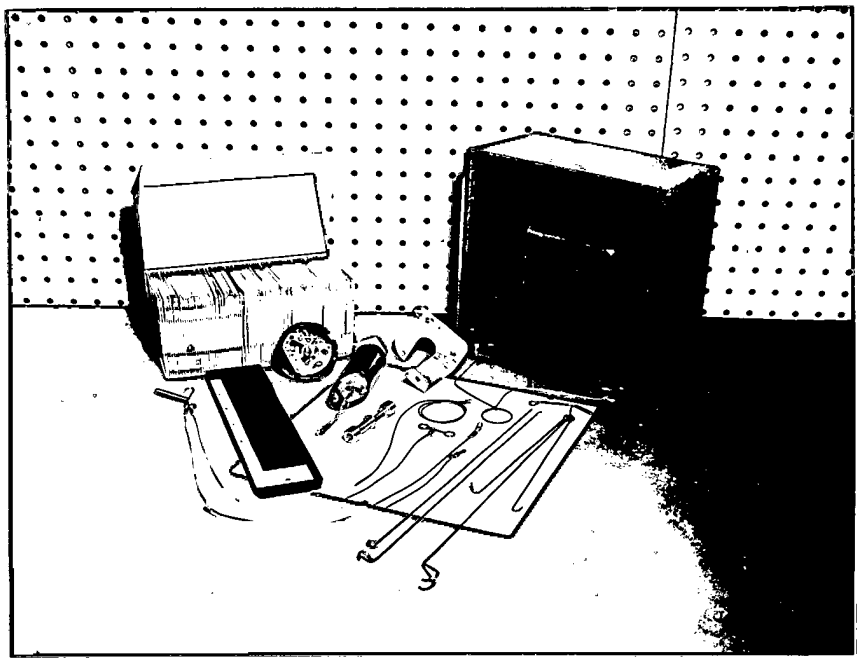

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Figure 3. Components of Leaflet Carrier, Before Assembly

Assembly Procedure

(1) Open the box containing the components of the Type 1 Time-Release Leaflet Carrier and place the parts on a smooth surface, approximately desk size. (See Figure 3).

(2) Pick up the Timer Chassis (D-19-6) in one hand and the Ballast Rack (D-19-7) in the other. Push the open end of the Ballast Rack, as shown in Figure 4, into the opening of the U-shaped clamp of the Timer Chassis until the end of the Ballast Rack touches the closed end of the clamp.

Note: Do not use excessive force; otherwise, damage to the Ballast Rack may result.

(3) Push the Drive Shaft (D-19-3) onto the timer mainshaft (Figure 5) to within 1/16 inch of the timer backing plate, and, with the Allen wrench provided, tighten the Allen set screw to secure the Drive Shaft to the timer mainshaft.

Note: In some models, the Drive Shaft is already attached to the timer mainshaft.

(4) Place the Timer Assembly (D-19-A4) against the backside of the Timer Chassis and slip the Timer Housing (D-19-2) flange under the bottom Timer Chassis lug (Figures 6 and 7). Align the two notches in the Timer Housing with the two top Timer Chassis lugs as shown in Figure 6. Rotate the Timer Housing in a clockwise direction until the second groove on the Timer Housing is matched with the dimple in the Timer Chassis as shown in Figure 7.

(5) Open the rectangular box that contains the Ballast-Card Assembly (D-19-A8); this box opens across corners, so that one corner of each ballast card is exposed. Slip the Ballast Rack over

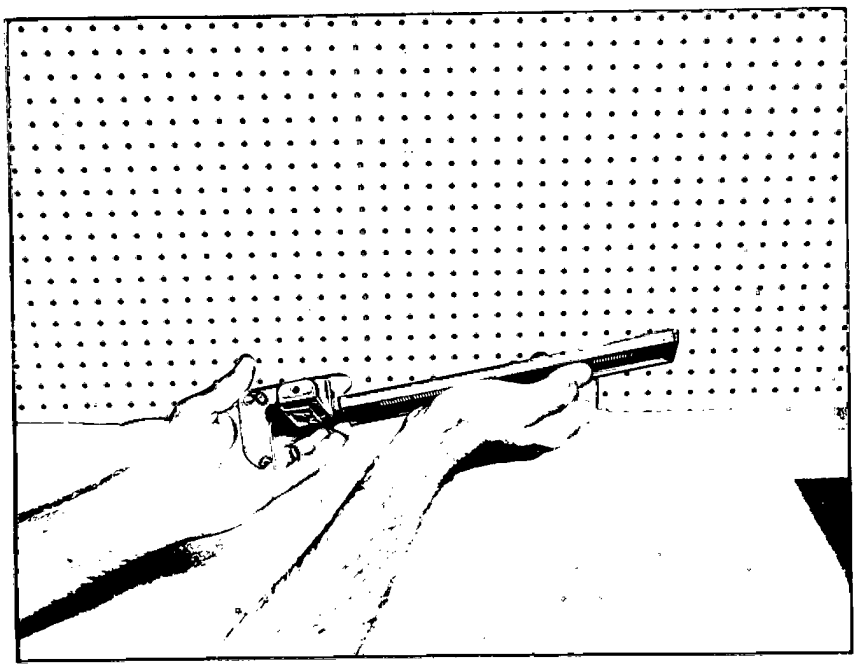

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Figure 4. Assembly of Ballast Rack to Timer Chassis

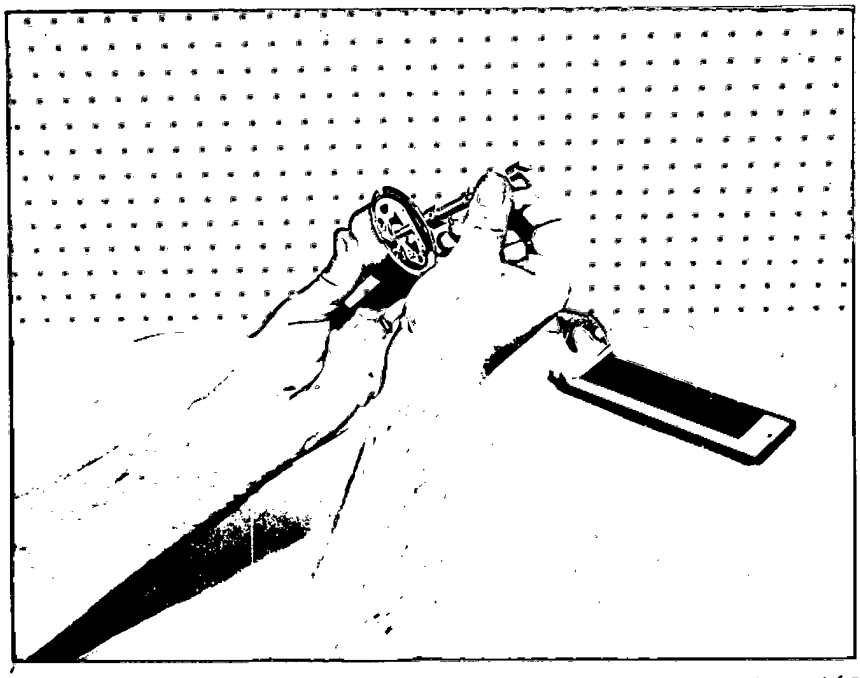

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Figure 5. Attachment of Drive Shaft to Timer Mainshaft

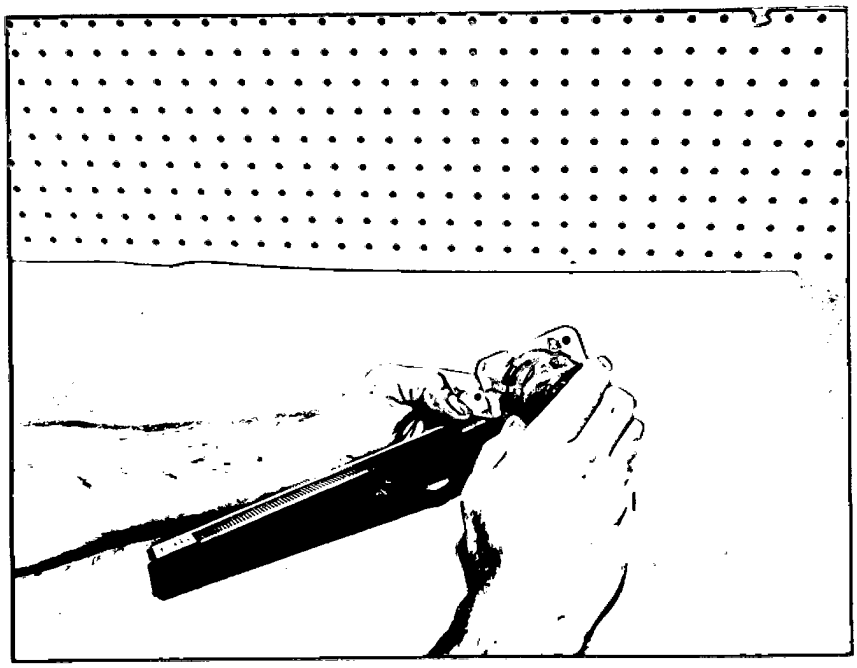

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Figure 6. Attachment of Timer Assembly to Timer Chassis

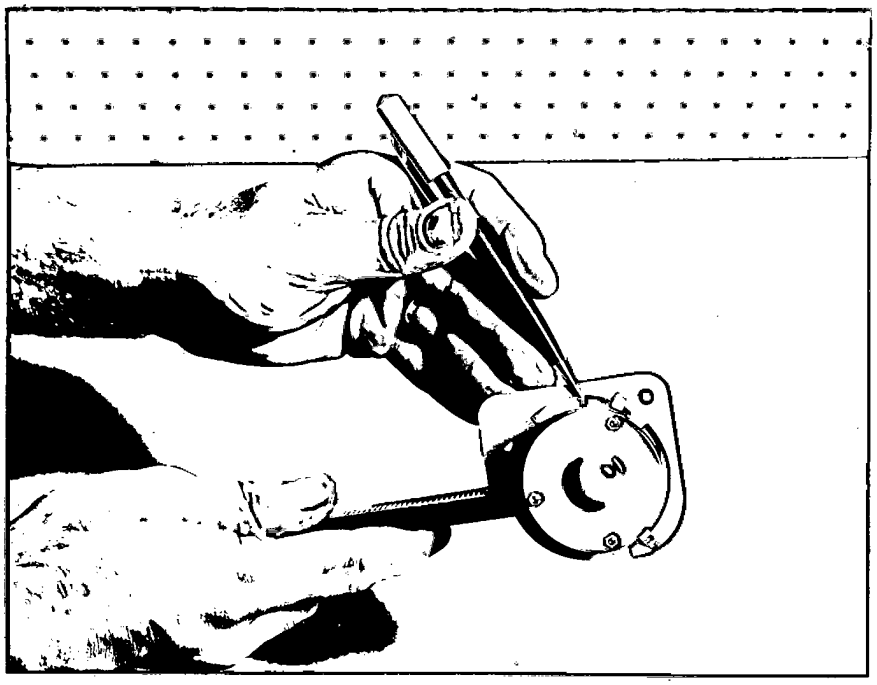

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Figure 7. Locking Timer Assembly in Position on Timer Chassis

the exposed corners of the ballast cards and locate the ballast cards in the appropriate slots as shown in Figure 8; one ballast card should be located progressively in each slot of the Ballast Rack, with the corner hole of each ballast card exposed above the Ballast Rack.

(6) Insert the threading needle through the holes in the ballast cards as shown in Figure 9. Remove the shipping container from the ballast cards.

(7) Support the assembly in one hand and locate the Support-Wire Assembly (D-19-A6) as shown in Figures 1 and 10: First, hook the longest of the three support wires, No. 1 Support Wire (D-19-10), through the hole provided in the far end of the Ballast Rack. Then, hook the next longest support wire, No. 2 Support Wire (D-19-11), in the hole provided in the small flange on the Timer Chassis. Next, install the shortest of the three support wires, No. 3 Support Wire (D-19-12), in the other hole provided in the Timer Chassis, and, with a pair of pliers, close the gap in the hook of the No. 3 Support Wire to approximately the same dimension as the gaps in the hooks of the other two support wires.

Note: The position of these hooks is important; each hook must face out from the assembly.

(8) Locate the Timer-Release Hook (D-19-15) in the lower hole of the Parachute Retainer (D-19-28) as shown in Figure 11. Hook the Main Support Wire (D-19-13) through the upper hole of the Parachute Retainer (Figure 12), and suspend the Parachute Retainer approximately 5 feet above the ground or floor.

Note: When the Parachute Assembly is not included in the Leaflet Carrier unit, the Timer-Release Hook is looped over the Main Support Wire.

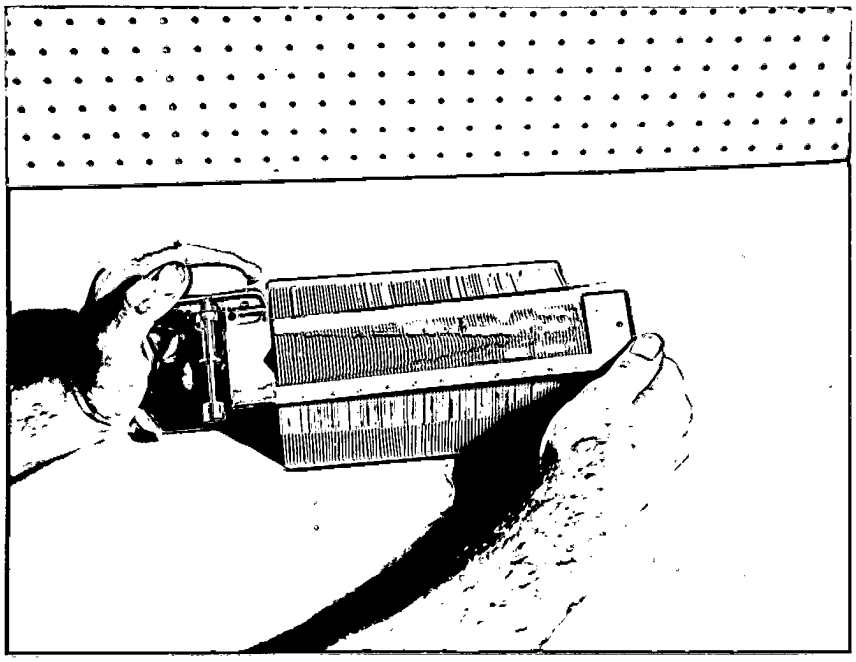

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Figure 8. Placement of Ballast Cards in Slots of Ballast Rack

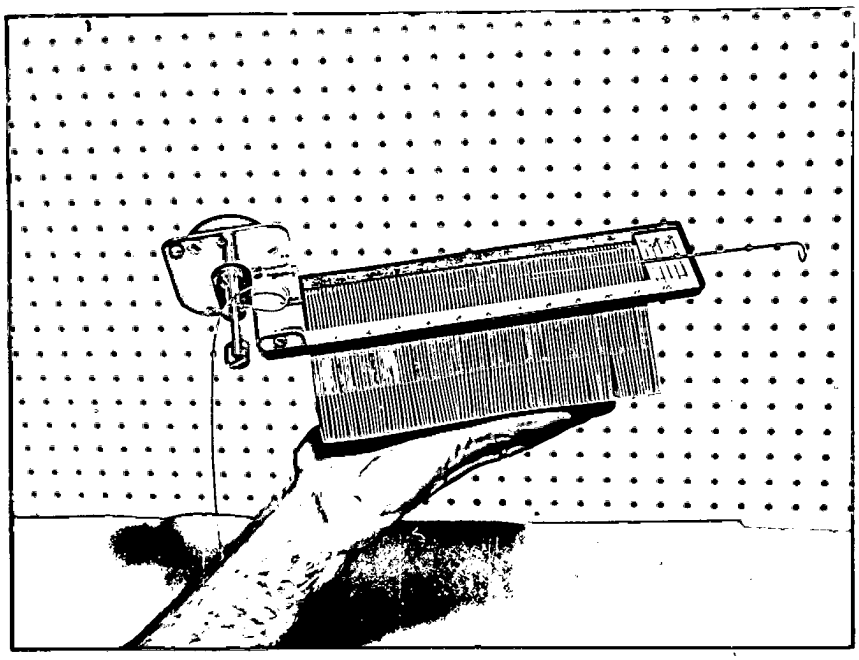

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Figure 9. Insertion of Threading Needle in Holes of Ballast Cards

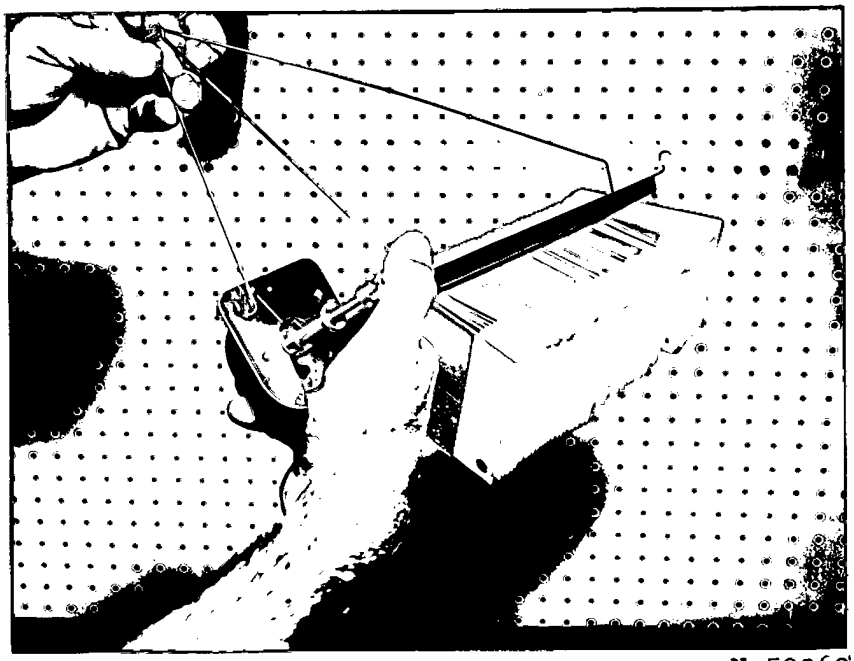

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Figure 10. Placement of Support Wires

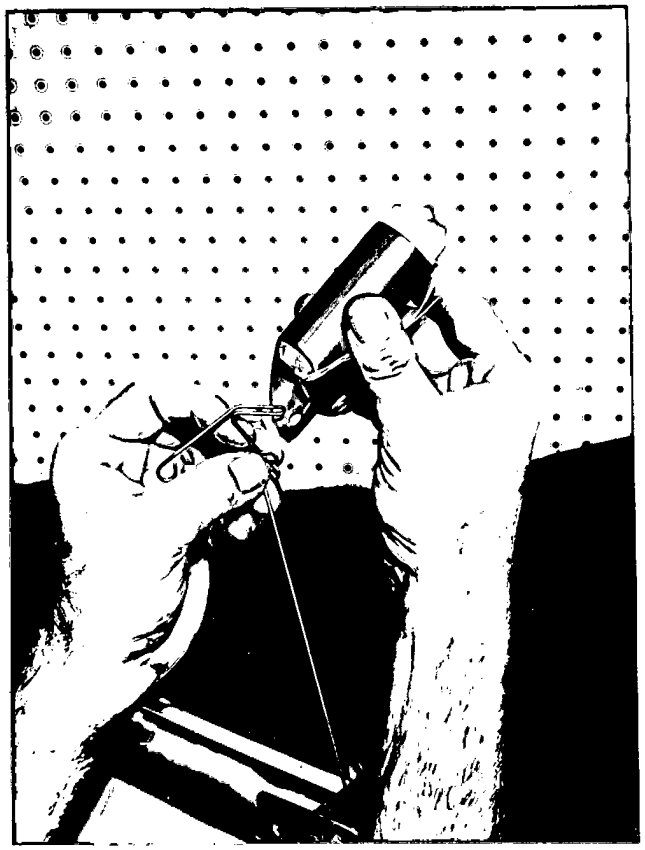

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Figure 11. Attachment of Timer-Release Hook to Parachute Retainer

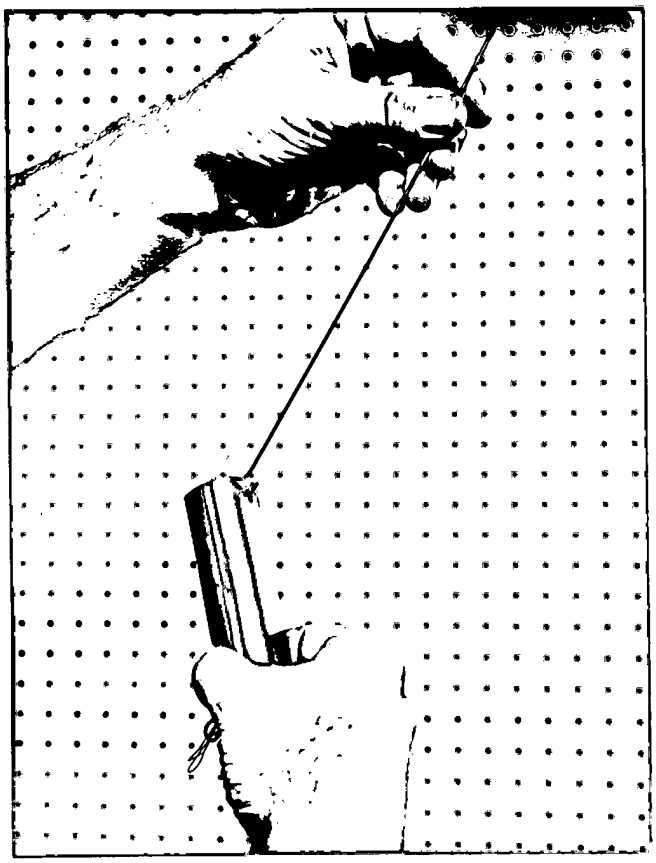

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Figure 12. Attachment of Main Support Wire to Parachute Retainer

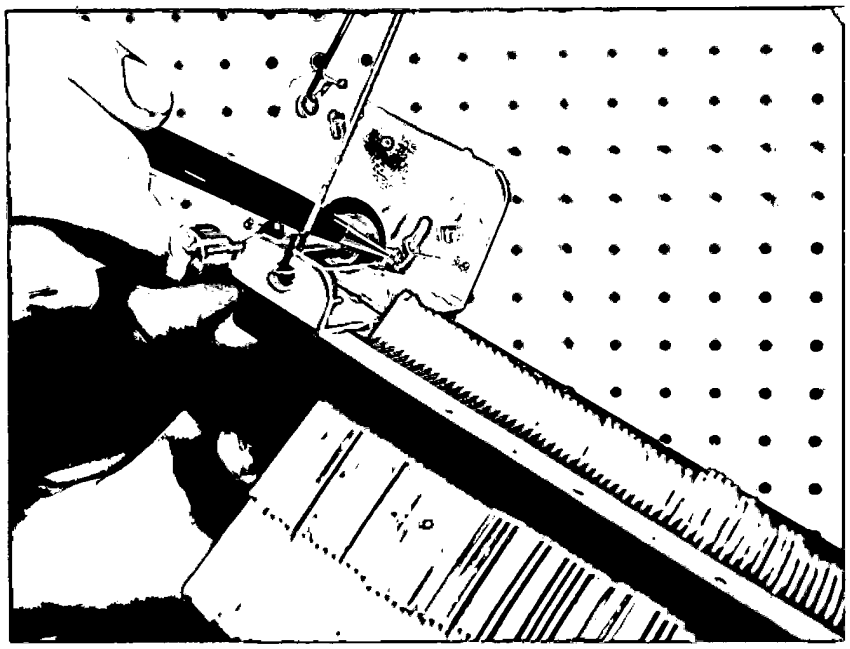

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Figure 13. Insertion of Loop of Snubber Line Through Hole in Timer Chassis

(9) Lay out the Harness Assembly (D-19-A3) on the working surface and remove any knots or entanglements. Pick up the looped end of the Snubber Line (D-19-23) and push it, from the bottom side, through the hole provided in the Timer Chassis as shown in Figure 13. Hook the parachute Suspension Lines (D-19-26) and the looped end of the Snubber Line in the eye of the Timer-Release Hook as shown in Figure 14. Close the eye of the Timer-Release Hook with a pair of pliers, to secure the loops of the parachute Suspension Lines and of the Snubber Line.

Note: When the Parachute Assembly is not included in the Leaflet Carrier unit, a line is fastened from the eye of the Timer-Release Hook to the top of the balloon.

(10) Turn the Load Container (D-19-29) upside down and force the Dump-Cord Retainer (D-19-18) (from the outside) into and through the hole provided in the bottom of the Load Container; see Figure 15. Turn the Load Container over and center the Dump-Cord Retainer over the hole as shown in Figure 16.

(11) Place the loop of the Drive Cord (D-19-21) over the Drive Pin (D-19-4) as shown in Figure 17. With a coin or screwdriver (Figure 18), rotate the Drive Shaft through 12 full turns in a clockwise direction, as seen from the slotted end of the Drive Shaft. When this operation is completed, there should be 12 complete loops of the Drive Cord on the Drive Shaft, and the Drive Pin should be aligned with the 0 (minute) mark stamped into the Timer Chassis.

Note: Each loop of the Drive Cord is equivalent to one hour of flight time.

(12) Take the Ballast-Release Cord (D-19-24), the cord which is knotted on one end, and pass the unknotted end through the

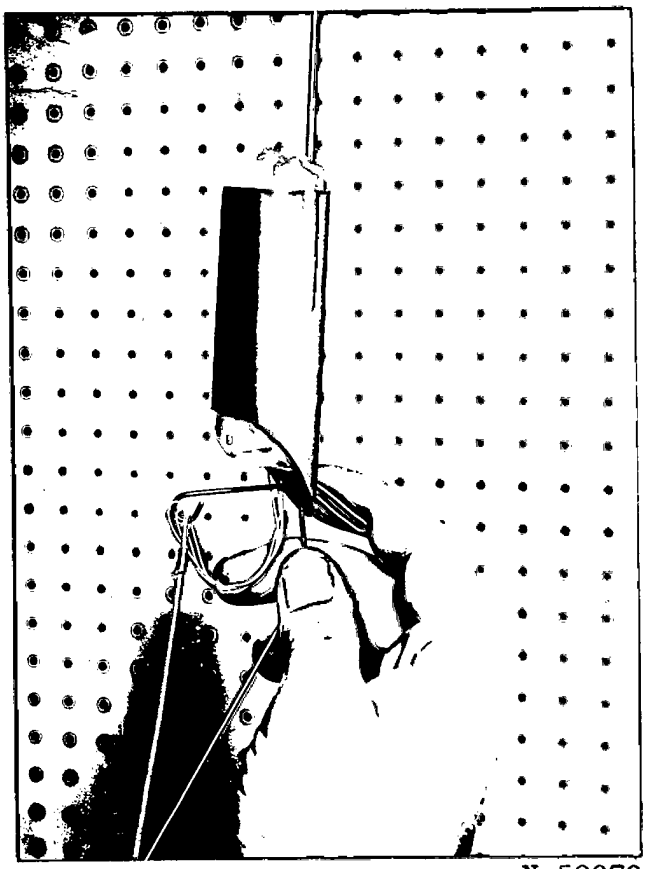

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Figure 14. Attachment of Loops of Snubber Line and of Parachute Suspension Lines to Timer-Release Hook

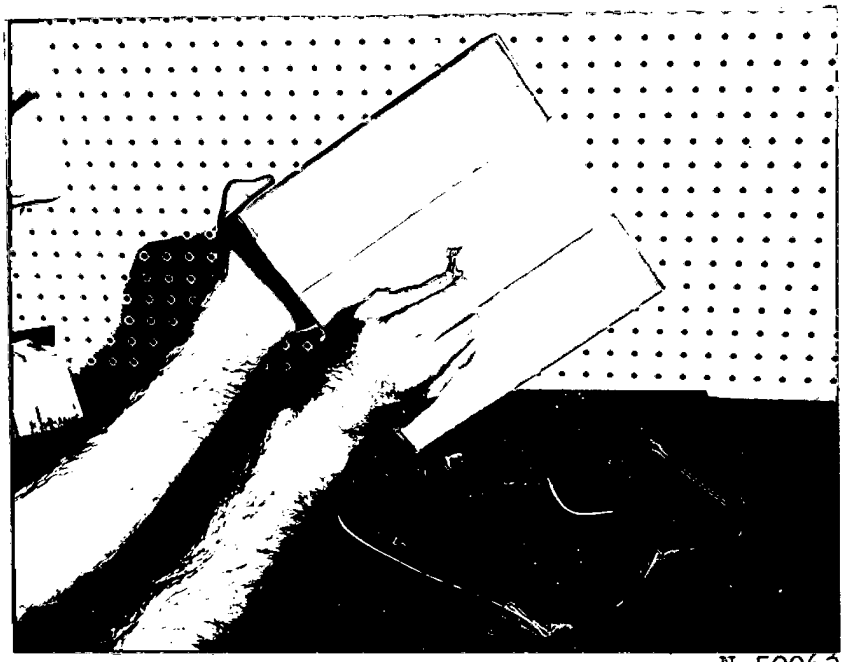

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Figure 15. Insertion of Dump-Cord Retainer Through Bottom of Load Container

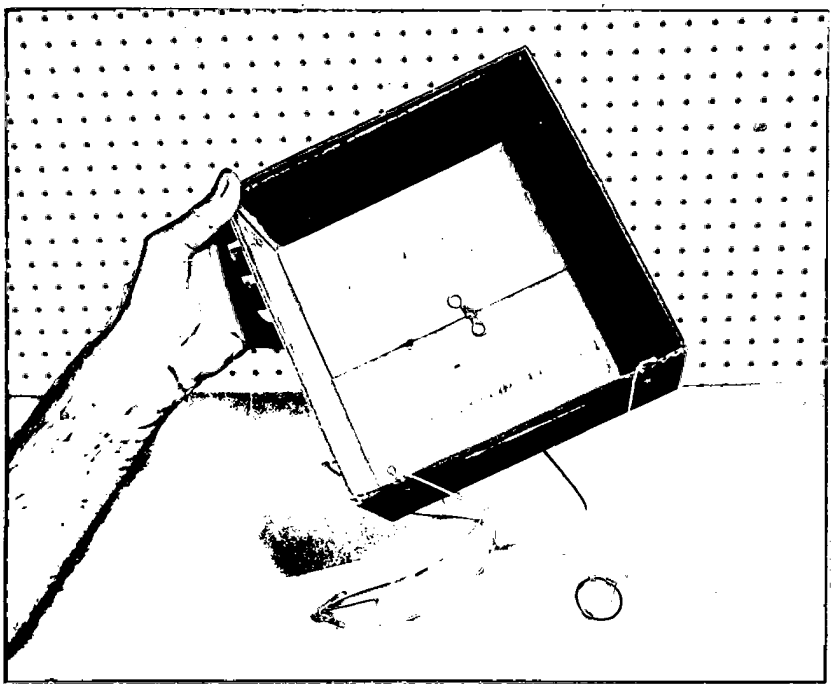

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Figure 16. Dump-Cord Retainer Centered Over Hole in Load Container

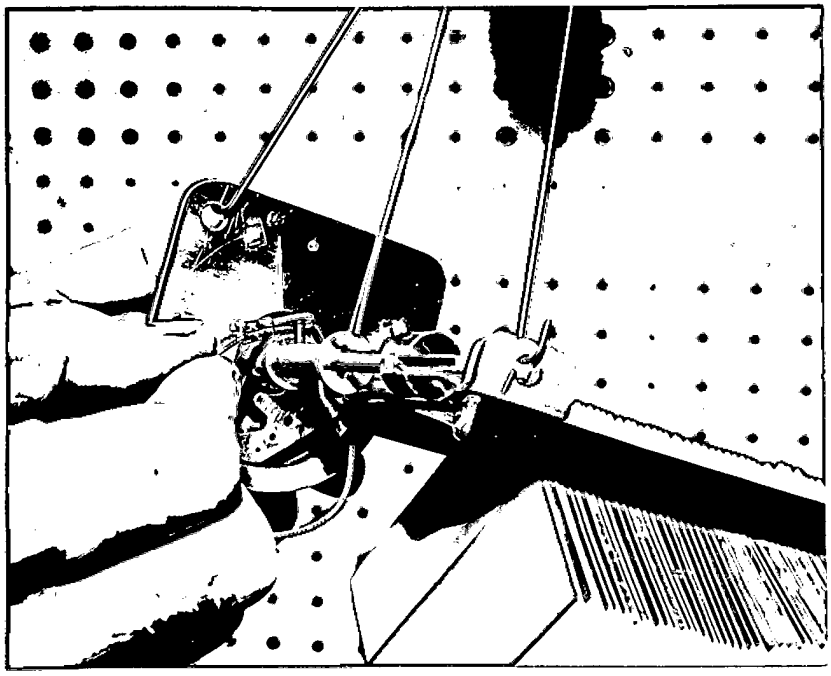

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Figure 17. Placement of Loop of Drive Cord Onto Drive Pin

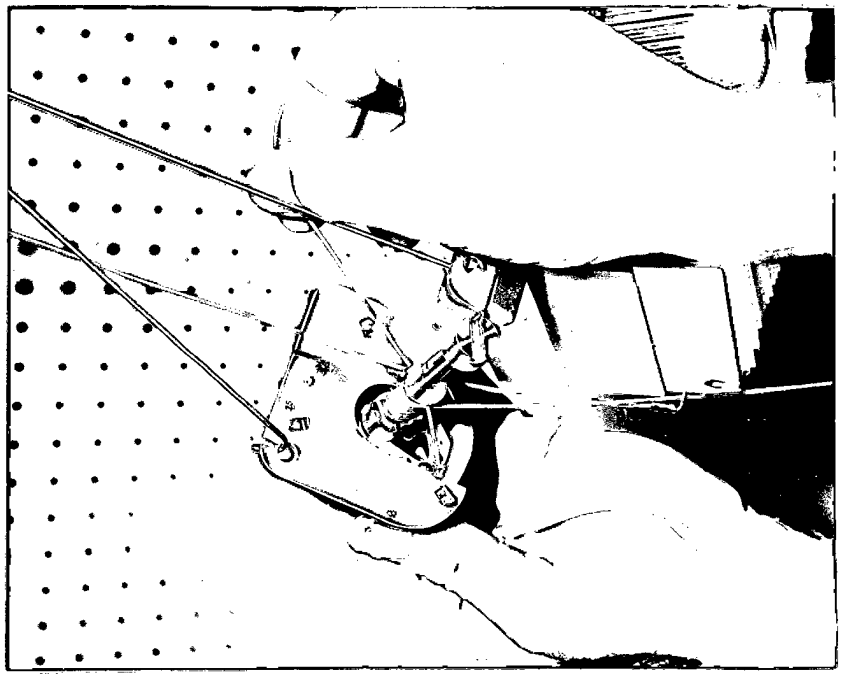

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Figure 19. Insertion of Ballast-Release Cord Through Drive Shaft

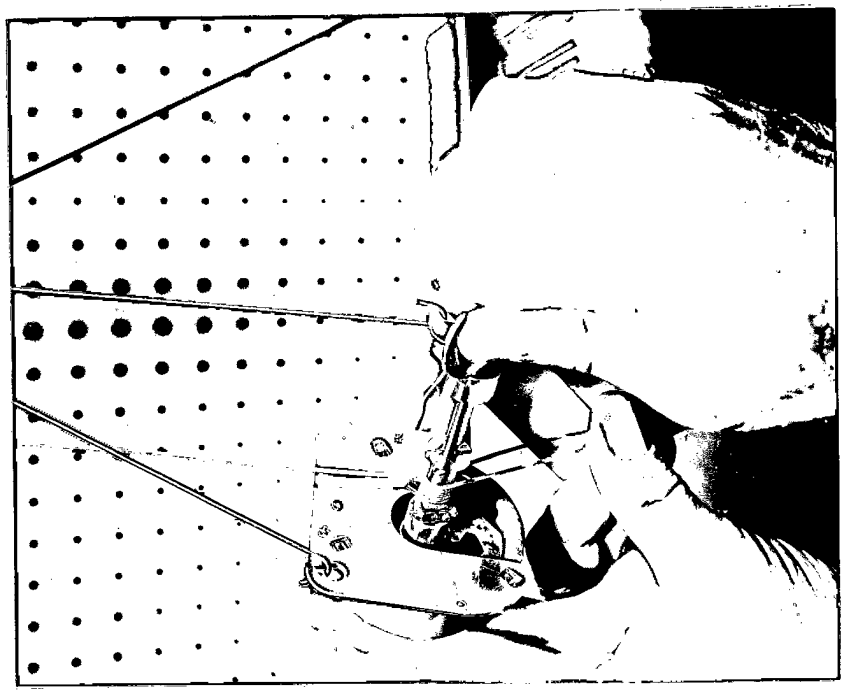

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Figure 18. Rotation of Drive Shaft With Coin

counterbored hole in the Drive Shaft; the Ballast-Release Cord should be inserted into the hole from the counterbored side, as shown in Figure 19. Pull the cord through the notch in the Drive Shaft flange and make one loop around the small diameter of the Drive Shaft in a clockwise direction, as seen from the slotted end of the Drive Shaft (Figure 20). Loop the Ballast-Release Cord over the threading-needle hook as shown in Figure 21. Pull the threading needle and the Ballast-Release Cord through the holes in the ballast cards as shown in Figure 22. Remove the threading needle, and pull the Ballast-Release Cord taut so as to remove any slack and to align the ballast cards.

Note: If excessive force is exerted, the Drive Shaft may be pulled out of line with the timer mainshaft.

Operating Procedure

With the Leaflet Carrier fully assembled, as described above, the following steps should be taken, in order to prepare the device for operation:

(1) Count the number of Drive Cord (D-19-21) loops on the Drive Shaft (D-19-3); there should be 12 complete loops of the Drive Cord around the Drive Shaft.

(2) Make sure that the Drive Pin (D-19-4) is opposite the 0 (minute) marking stamped into the Timer Chassis (D-19-6).

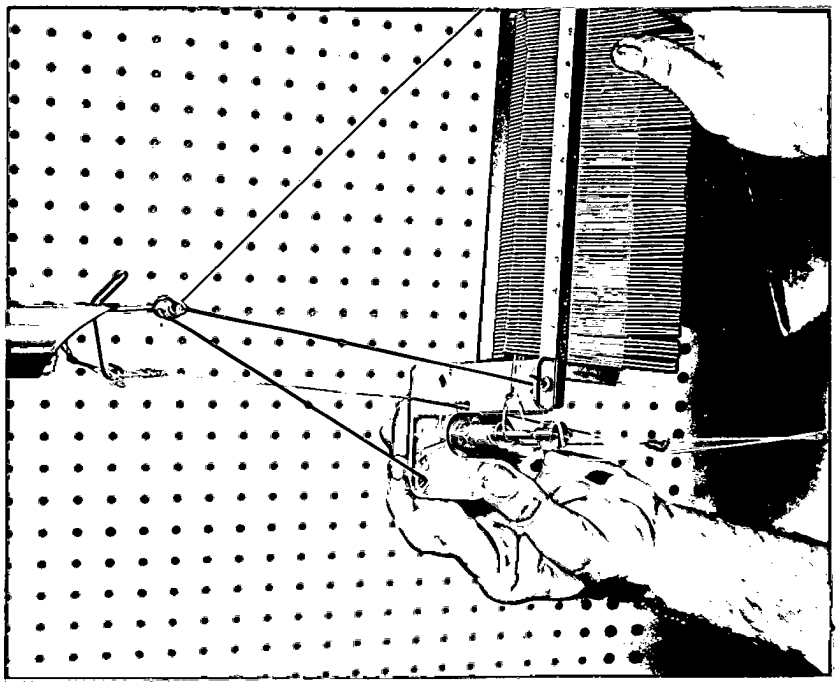

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Figure 21. Looping Ballast-Release Cord Over Hook of Threading Needle

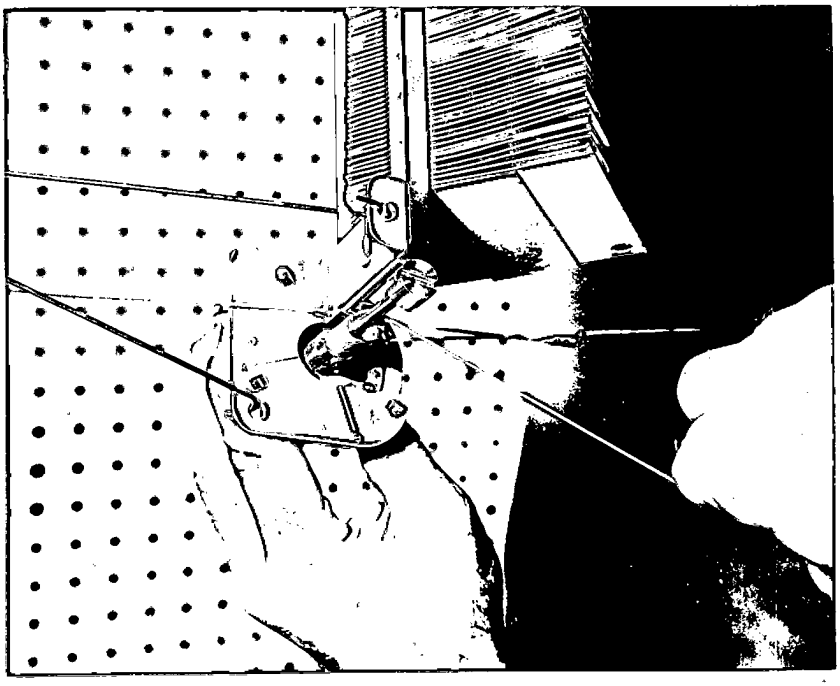

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Figure 20. Wrapping Ballast-Release Cord Around Small Diameter of Drive Shaft

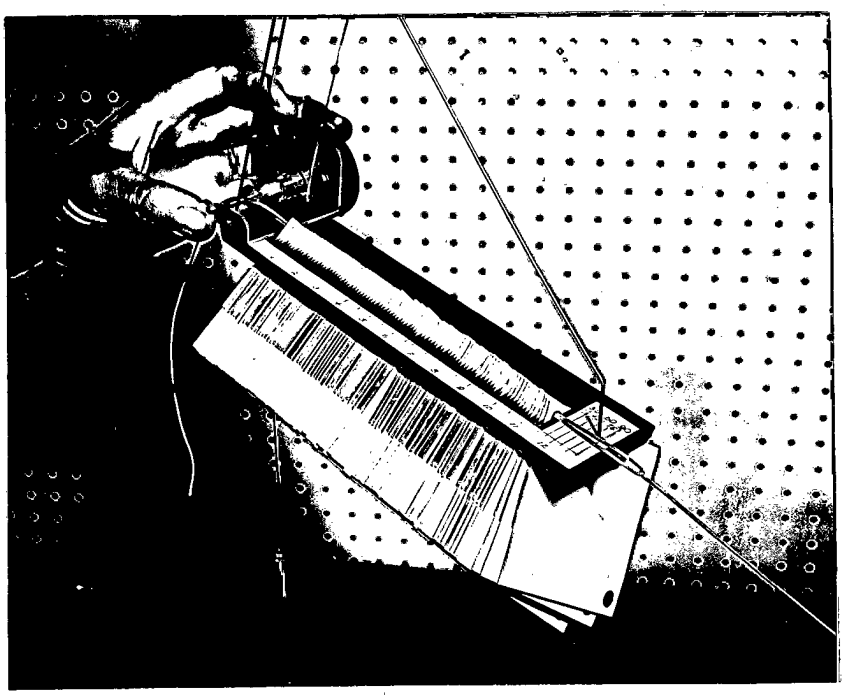

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Figure 22. Pulling Ballast-Release Cord Through Holes in Ballast Cards With Threading Needle

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Figure 23. Marking Ballast-Release Cord at 12 (Hour) Mark

(3) With the Ballast-Release Cord (D-19-24) held taut, make a mark with a pencil, pen, or some other suitable marking instrument on the Ballast-Release Cord directly in line with the 12 (hour) mark on the long (hour) scale of the Ballast Rack (D-19-7) as shown in Figure 23.

(4) To set the device for the desired flight time:

(a) When the desired flight time amounts to a number of whole hours (and no minutes), rotate the Drive Shaft in a counterclockwise direction until the mark which was made on the Ballast-Release Cord is opposite the appropriate number (of hours) on the long (hour) scale of the Ballast Rack (Figure 24).

(b) When the desired flight time amounts to a number of whole hours and minutes, rotate the Drive Shaft in a counterclockwise direction until the mark which was made on the Ballast-Release Cord is opposite the appropriate number on the long (hour) scale of the Ballast Rack (Figure 24); in this case, the appropriate number is determined by adding 1 to the number of whole hours of flight time desired. To provide for the additional flight time that amounts to less than 1 whole hour, rotate the Drive Shaft counterclockwise until the Drive Pin is opposite the appropriate number on the circular (minute) scale which is stamped into the Timer Chassis (Figure 25); the appropriate number is the number of minutes of additional flight time desired. This operation permits setting for an additional flight time of 15 or 30 minutes. If a setting of 45 minutes is desired, rotate the Drive Shaft counterclockwise until the scribed line on the Drive Shaft, diametrically opposite the Drive Pin, is

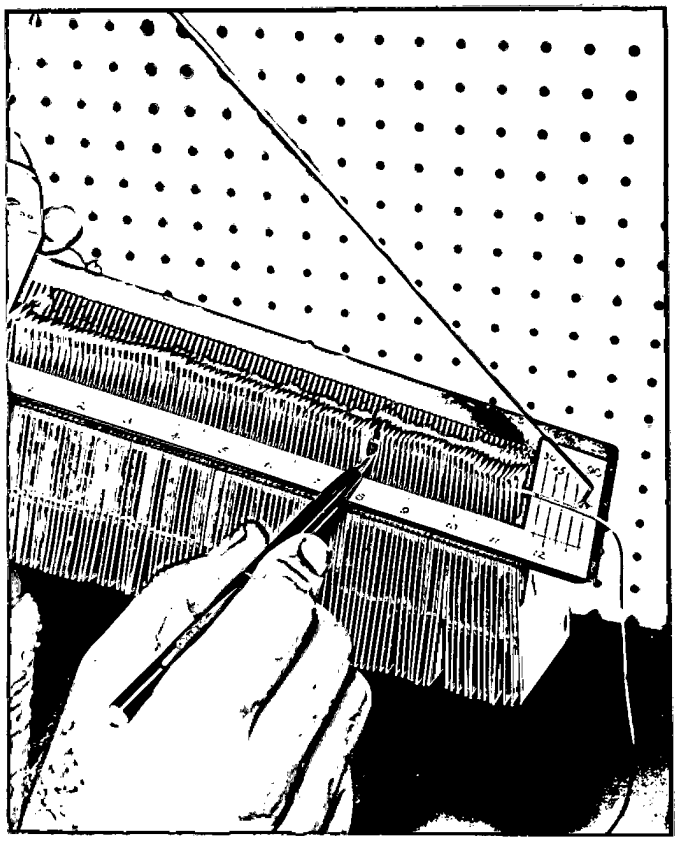

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Figure 24. Location of Mark on Ballast-Release Cord Relative to Long (Hour) Scale on Ballast Rack, to Set for Whole Hours of Desired Flight Time

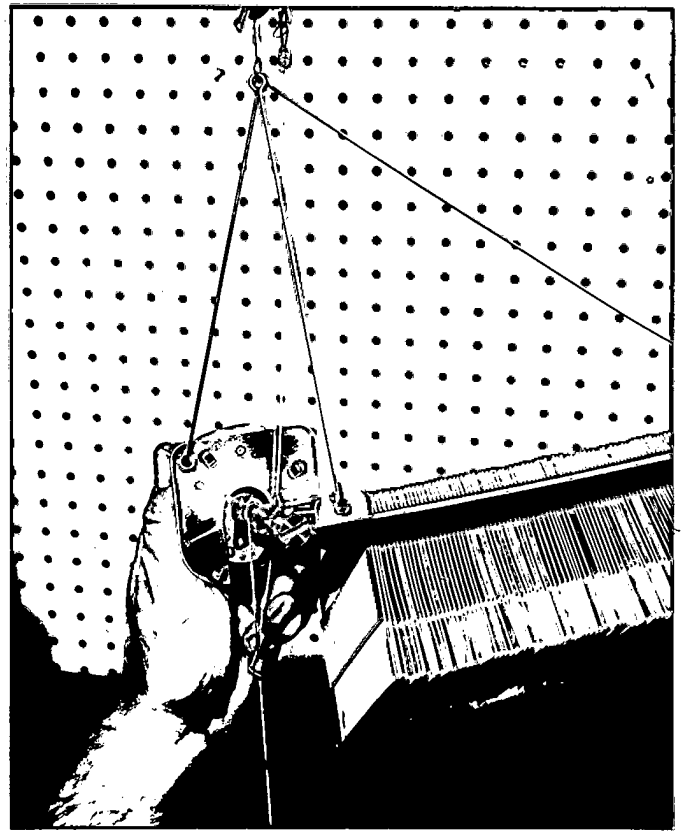

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Figure 25. Location of Drive Pin Relative to Circular (Minute) Scale Stamped Into Timer Chassis, to Set for Less Than 1 Whole Hour of Additional Desired Flight Time

aligned with the 15 (minute) mark; with the Drive Shaft in this position, the Drive Pin will be pointing downward toward the bottom of the Timer Chassis between the 30 and 0 (minute) marks.

Example: The desired flight time is 7 hours, 15 minutes. To set the device, first, mark the Ballast-Release Cord opposite the 12 (hour) mark on the long (hour) scale of the Ballast Rack as shown in Figure 23. Then, rotate the Drive Shaft in a counterclockwise direction until the mark on the Ballast-Release Cord is opposite the 8 (7 hours plus 1) mark on the long (hour) scale of the Ballast Rack as shown in Figure 24; with the Drive Shaft in this position, the Drive Pin should be opposite the 0 (minute) mark on the circular (minute) scale stamped into the Timer Chassis. Continue to rotate the Drive Shaft in a counterclockwise direction until the Drive Pin is opposite the 15 (minute) mark on the Timer Chassis scale as shown in Figure 25. The device is then set for a 7-hour, 15-minute flight time.

(5) Cut the Ballast-Release Cord with a razor blade or some other sharp cutting instrument at the proper mark on the ballast delay-time scale; see Figure 26. This is the short scale located at the outer end of the Ballast Rack and is marked in 15-minute increments. – set for amount of Time for balloon to reach ceiling altitude

(6) Place the leaflet load into the Load Container (D-19-29). See Figure 27.

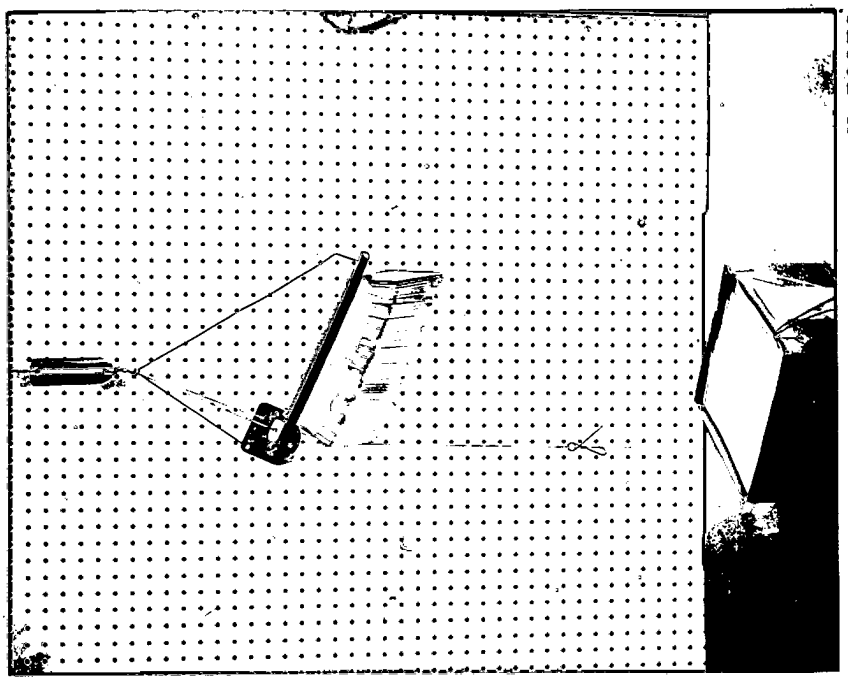

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Figure 27. Placement of Leaflets in Load Container

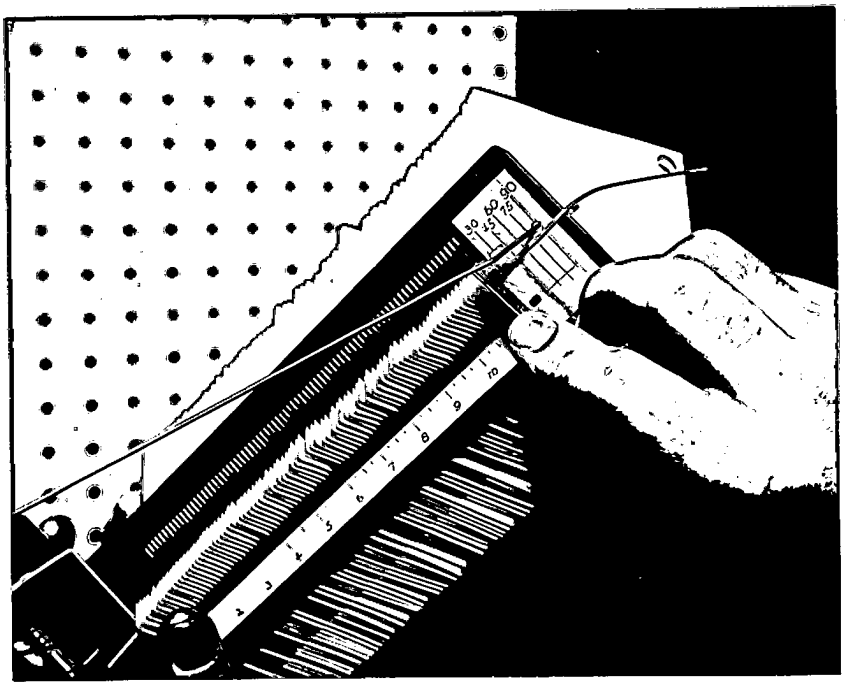

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Figure 26. Cutting of Ballast-Release Cord to Obtain Proper Delay-Time Setting

(7) Engage the Load-Release Ring (D-19-17) in the Load-Release Hook (D-19-16). See Figures 28 and 29.

(8) Place the Load-Container Cover (D-19-30) between the lines which support the Load Container and engage the supporting lines in the notches of the Load-Container Cover. See Figure 30.

(9) Attach the Main Support Wire (D-19-13) to the balloon.

(10) With the weight of the leaflet load on the Drive Cord, the Timer Movement should be running. Before releasing the balloon, reset the Drive Pin to the proper flight-time minute mark, as was described under Step 4.

(11) Release the unit for flight.

Malfunctions

If the Leaflet Carrier has been assembled and prepared for flight as described in the previous sections, no trouble should be encountered with the operation of the device. However, prior to release of the balloon with the Time-Release Leaflet Carrier, the Timer Movement (D-19-1) should be checked to insure that it is ticking. Should the Timer Movement fail to operate, all steps of the "Assembly Procedure" should be reviewed in an attempt to locate the difficulty. If the device is properly assembled and is set for operation, and if the Timer Movement fails to operate, the Timer Movement should be replaced.

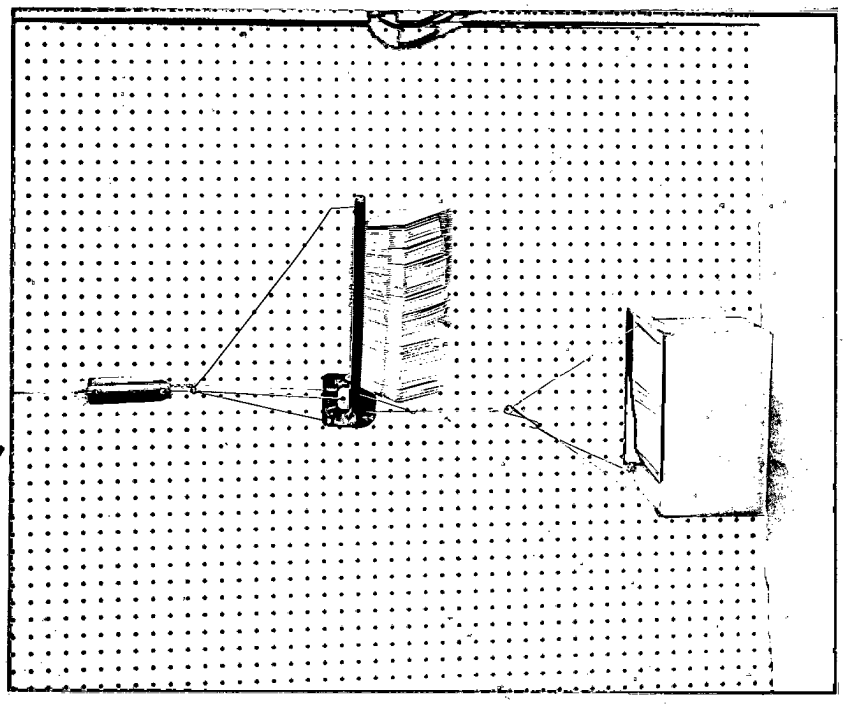

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Figure 29. Load-Release Ring and Hook in Place

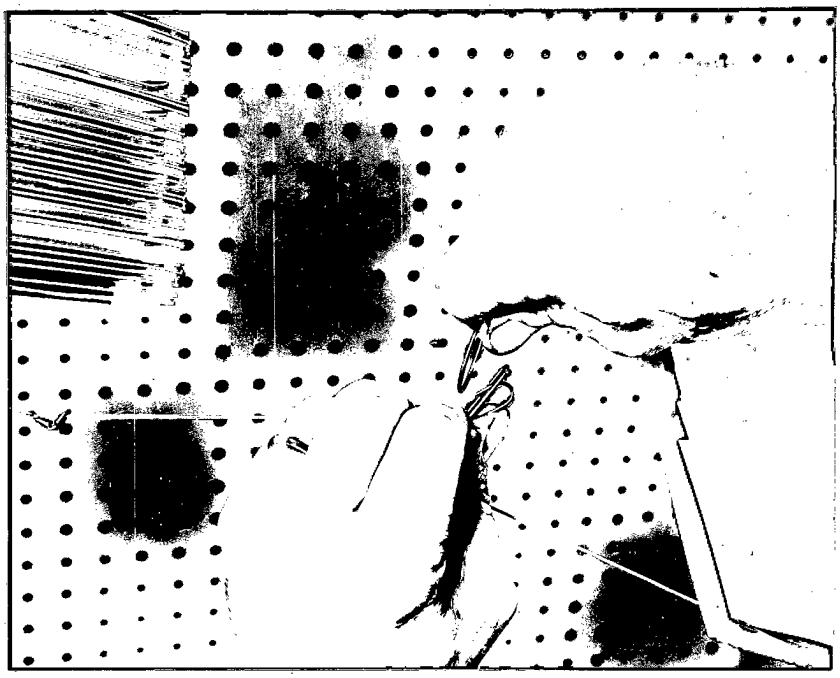

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Figure 28. Engaging Load-Release Ring in Load-Release Hook

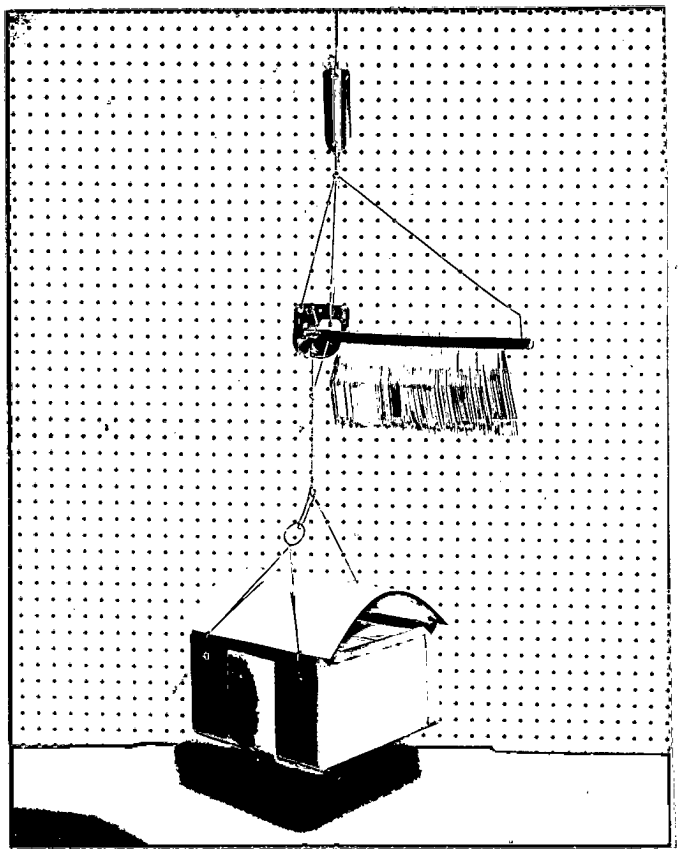

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Figure 30. Load-Container Cover in Place